E-EGS11 EGS Science Data System Performance Test - EDC

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E-EGS 11 EGS Science Data System Performance Test - EDC

Overview

This test verifies the system-level performance of the EGS Science Data System in an operational environmer at EDC DAAC. The operational activities consist of the following:

- Ingest and archive ASTER Level 1a and Level 1 b data from tapes,
- Ingest and archive Landsat 7 L0R data products from LPS,
- Ingest and archive MODIS Level 2 products from GSFC,
- Ingest and archive ancillary data for ASTER and MODIS product generation
- Generation of MODIS Level 3 and ASTER Level 2 and Level 3 products and their archival
- User data access and
- Data distribution.

For this test, the system will be configured to operate in "a day in the life of a DAAC" scenario, with normal daily operations ("Normal Operations" based on the OPS Rehearsal Operations Scenarios).

No functional requirements are verified in this test, as they will have been verified in the system/subsystem/interface tests that precede this test.

Scope[1]

The aim of the test is:

- to verify EGS Science Data System performance when the ingest of all data streams, product generation, archival, data access and distribution activities are being carried out concurrently, according to the normal daily operations schedule of the DAAC.
- to verify the timely availability of archived data to the network, for data distribution under specified conditions.

Details of the test cases and test procedures are given in the following sections.

Test Objectives

Test Case 1: Daily science operations performance verification test

This test case verifies the performance of user data access, and data distribution, when the system is operational with concurrent ingest and archival of Landsat L0 R data products, ASTER L 1a, 1b), ancillary data, MODIS L2 data, concurrent MODIS and ASTER products generation (TBD for drop 4) and archival, according to the daily operations plan. Performance of the following are verified:

- Science data products generation
- Data access

[1] A clear definition of the performance capabilities for Drop 4 is not available. The scope of the performance testing is provisional and will be under constant review.

- Data distribution

Test Case 2: Timely availability of archived data to the network, to verify the performance capabilities for data distribution under specified conditions. (applicability to Release2.0, Drop 4, is TBD)

Success criteria used for performance verification are derived from the following requirements[2] (Provisional). Details of the requirements are given in Attachment-X

(DADS1235#B)[3], (DADS2778#B), DADS3100#B, DADS3110#B, DADS3125#B, DADS3126#B, DADS3135#B, EOSD1030#B, EOSD1050#B, EOSD1060#B, EOSD1070#B, (EOSD1080#B), IMS-1780#B, (IMS-1785#B).

Test Configuration:

[2] A clear definition of the performance capabilities for Drop 4 is not available. The scope of the performance testing is provisional and will be under constant review.
[3] Requirements in parenthesis are not being tested now as they are outside the scope of Release 2.0.

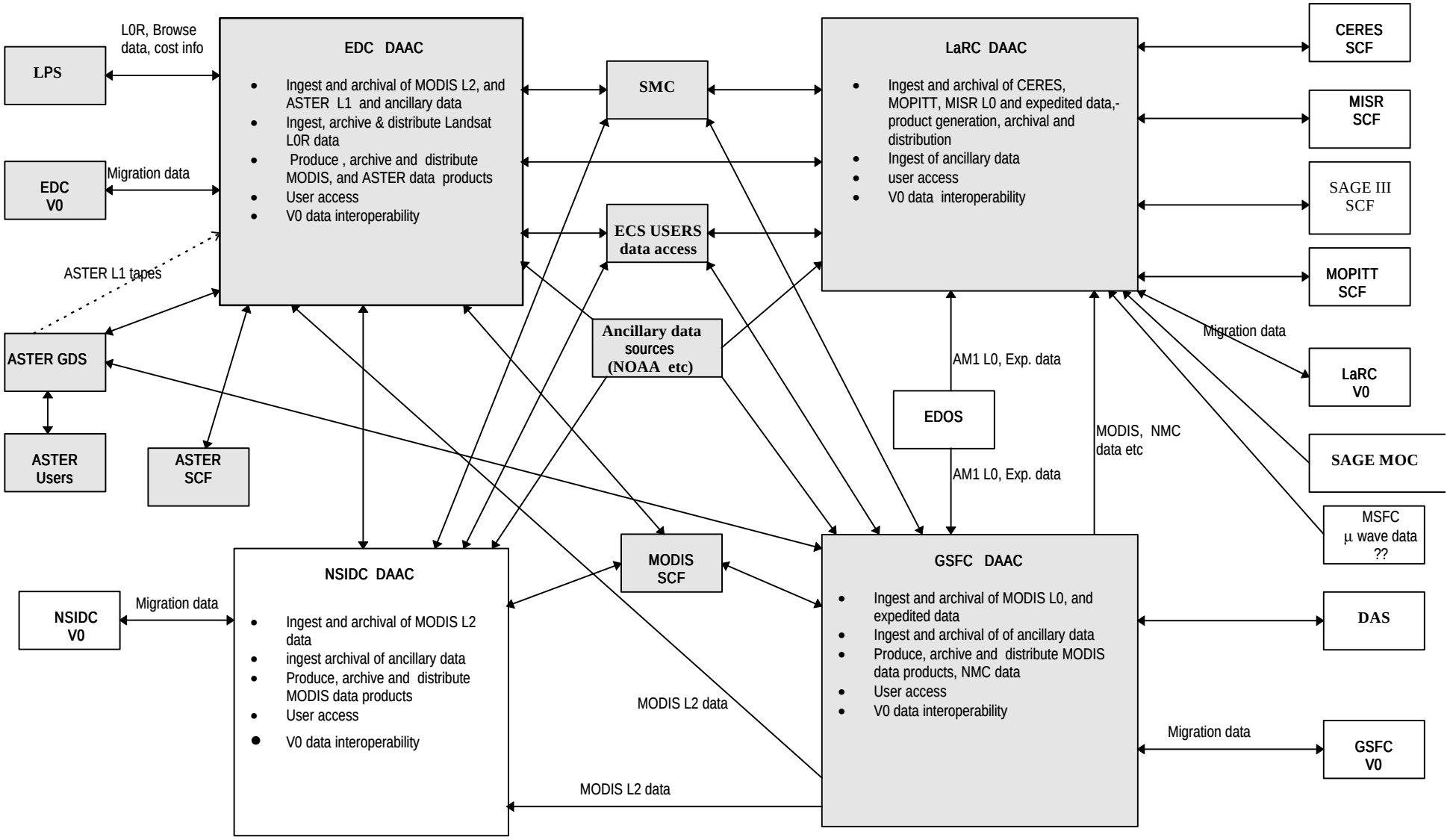

Exhibit 1: Test Configuration and Data flow- EDC (Shaded)

Participants and Support Requirements

Participants:

DAAC M&O personnel

EGS I&T Test Coordinator

LPS Operations personnel

Communications:

Voice: All operational circuits

Data: All operational circuits

Equipment and Hardware:

Hardware: TBD

Software: TBD

Test Tools: TBD

Test data for daily science operations performance verifications test

Description/ Characteristics	Source	File/Script Name - Physical loc.	Estimated Volume[1]
Test Case 1			
ASTER L1a and L1b data tapes for ingest	ASTER GDS by mail		89.64 GB/day
ASTER L0 Expedited Data sets (EDS)	GSFC		Small
Landsat L0R data, multiple files for ingest	LPS		138 GB/day
MODIS Level 2 data	GSFC		TBD
Ancillary data as required for ASTER and MODIS science data product generation	TBD		
Data in ECS archive for user access and distribution	TBD		
Test Case 2			

Description/ Characteristics	Source	File/Script Name - Physical loc.	Estimated Volume[1]
Data sets for rapid retrieval kept on line	TBD		25 GB

[1] All data volumes are provisional.

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Test Case Descriptions

EGS 11.01 : Daily science operations performance verification test

Requirements:(provisional)
DADS3100#B, DADS3110#B, DADS3135#B, EOSD1060#B, EOSD1070#B, IMS-1780#B, .

Test Configuration: EDC DAAC will be configured for the daily operational activities based on the science operations plan and the technical baseline. All hardware, software, and PGEs as integrated into the system are operational and the operations are supported by the M&O personnel. EDC will receive Landsat 7 L0R data files from LPS and ASTER L1a tapes from ASTER GDS. EDC will also receive MODIS L2 data from GSFC. EDC is configured to receive the ancillary data as required for product generation from the designated sources. Test data files for use in data access, browse, and data distribution are made available on the ECS archives at the DAAC and V0 at the DAAC is available to ECS for user access. For performance testing of user access/data distribution functions, TBD user terminals are provided with operations personnel.

Test Execution: The DAAC will be operational in the configuration briefly described above and all the scheduled daily operations will be running during the complete duration of all the test cases identified for this test. The procedures for this test case are written in two parts, test case 1A and test case 1B. The test case 1A will be executed over a period of 24 -72 hours, to verify the generation of higher level products and test case 1B will be run for 12 hours, for verifying the performance of user data access and data distribution. The test is aimed at verifying the performance requirements rather than functional requirements, which are verified in EGS 10 and earlier tests. However, any failures or errors in the operational functions will be recorded for appropriate actions. Test cases 1A and 1B, described below will be performed concurrently.

Test case 1A

Ingest, data products generation, and archival: This test verifies that the Landsat L0R data products are ingested from LPS, MODIS L 2 data products are ingested from GSFC and ASTER L 1a/1b data are ingested from tapes. MODIS and ASTER higher-level products (TBD) are generated within the specified performance limits and are archived. Details of the ingest, product generation and archival activities at the DAAC are given in the Table below: (needs update/completion).

DAAC	Ingest and Archive	Data Received from	Volume/dayGB/ day	Product generation and Archive	Volume/day[4] (TBD)
EDC	ASTER L1a, 1b	TAPE	89.64	ASTER Products	TBD
	Landsat L0R	LPS	138	--	
	MODIS L2	GSFC	?	MODIS L3 products	TBD

Table: Details of data Ingest and Products Archived

Test Procedures The test procedures may be seen in Attachment 1A

[4] The products generated and the volume will be determined in discussion with the DAAC based on the number of PGEs integrated into the system for the test in the Release 2 Drop 4 time frame.

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Test Case 1B

Data access: This part of the test case verifies performance of user access, search and browse. This test verifies the following:

- User log on and authorization 13 sec.
- Directory search
  - by single key word 8 sec.
  - by multiple key word and time or space range check 13 sec.
- Guide search, search for document by key word(B1) 8 sec.
- Inventory search
  - Search one instrument by multiple key word attributes with time or space range check 8 sec
  - Search multiple instruments by multiple keyword attributes with time or space range check (1 DAAC) 18 sec
- Status check (order or account or DAR) 13 sec.
- Browse: Retrieve and begin to display standard pre-computed browse product. 58 sec.
- Ordering Services:
  - Local DAAC order submission and confirmation 13 sec.
  - Order cost estimates (Work around for Landsat) 13 sec

Number of user accesses at the DAAC: The performance specifications refer to the total number of accesses for the ECS. An estimate of the number of accesses for each DAAC is derived using available information on the user access patterns for different DAACs reported in the " Technical Baseline"(Feb.'96), and is as follows:

EDC 34%

GSFC 17%

LaRC 8%

NSIDC 6%

(ASF11% and JPL 23%)

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Using the above information, an effort is made to determine the total number of service invocations at EDC DAAC for conducting the performance test and is given below:

Service	No of operations/hr in ECS	No of operations/hr at EDC	Specific operation	Response time requirement (sec)
Log-on and authorization	100	34	Authorization	13
Directory search	80	27	single keyword multiple keyword	8 13
Guide search	40	14	doc search by keyword	8
Inventory search	120	41	One inst Multi-inst	8 18
Status check	60	20	Status of Order/DAR Account status	13 13
Browse	50	17	Begin display	58
Ordering services	25	9	Local DAAC Cost estimate	13 13

Table: Estimated Service Invocations at EDC

Data distribution: This part of the test verifies that the DAAC can distribute twice the volume of products archived on any day, which includes Landsat L0R archive, ASTER L1, MODIS Level 2 and higher level products, archived at EDC. (In case of Landsat L0R data the volume will be taken as 50 GB, as specified in F&PRS). An estimate of the data volumes expected to be archived is made using the L0 data estimates from the Technical Baseline, and L1 to L3 archival volumes at launch, from F&PRS. (These data volumes are to be updated)

Estimated Data Archival at DAAC (Provisional)

DAAC	L0 Data Archive[1] GB/day	Product Archive[2] GB/Day	Total GB/Day
EDC	227.64	194	431.64

[1] From the Technical Baseline, February 96, to be modified for Release 2.0

[2] From the F&PRS

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- The test consists of the following steps:
    - Determine the total volume of data to be distributed from EDC (for electronic and for media distribution) over the period of the test (12 hours).
    - Generate a large number of product orders.
    - Ensure that 50% of the distribution is on hard media.
    - The volume of any single order may be within TBD limits.
    - Determine the time for the completion of data delivery for each order.
    - Verify that the rates of electronic distribution and media distribution are within the specifications.
    - For EDC, ensure that the Landsat 7 data distribution is to the extent of 50 GB / day.

Test Procedures The test procedures may be seen in Attachment 1B

EGS 11 02 : Timely availability of archived data to network

Requirements:(provisional)

DADS3125#B, DADS3126#B

This test verifies the capability of ECS at each DAAC (operating under normal conditions) to:

- deliver data archived on tape to the communications network, in response to data requests, within 5 minutes. (DADS3125 specifies that each file should be 100MB or less along with other conditions under which the test is to be conducted).
- deliver data sets available for rapid retrieval (kept on line)within 60 sec. after receipt of the data order. (DADS3126 specifies the volume of the data to be delivered and the number of data requests to be satisfied in parallel for each DAAC).

Test Procedures The Test procedures may be seen in Attachment 2.

Attachment 1A

Test Case Id: V2.0-EGS-11-01-A

Description: This test verifies that EDC ingests and archives L0R data from Landsat LPS, ASTER L1a /1b data from tapes, and MODIS Level 2 data from GSFC. EDC also generates ASTER and MODIS higher-level products allocated to release 2.0, Drop 4 (TBD), within the specified performance limits. The test case will be run for 24 -72 hours

Objectives: Verify that the data are ingested and archived correctly and the higher level products are generated within the specified times.

Configuration: EDC DAAC will be configured for the daily operational activities based on the science operations plan and the technical baseline. All hardware, software, and PGEs allocated to the Release and as integrated in to the system are operational and the operations are supported by the M&O personnel. The EDC is configured to receive Landsat- 7 L0R data from LPS and MODIS Level 2 data from GSFC, and ancillary data as required for product generation from the designated sources. This test case will run concurrently with test case1B at this DAAC.

Data Inputs: L0R data from LPS, and ASTER L1a /L1b data tapes from ASTER GDS, ASTER L0 EDS (?), MODIS L2 data from GSFC. All ancillary data required for ASTER and MODIS higher level product generation.

Verified Requirements: DADS2778#B, DADS3100#B, EOSD1060#B, EOSD1070#B, EOSD1080#B, DADS1235#B, EOSD1015#B, EOSD1030#B.

Test Procedures:

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EDC	Verify that EDC DAAC is fully operational with all hardware / software/all interfaces installed and with all PGEs installed and operational	EDC is operational			
1.002	EDC	Verify from LPS that LPS is fully operational and is in a position to support the test	LPS is operational			
1.003	EDC	Verify that ASTER Level 1a tapes are available for ingest, and product generation along with ancillary data and lower level products. Also verify that data for user access/data distribution is available in the ECS archives at the DAAC.	All test data are available for the test			

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.004	EDC	Bring up Autosys for monitoring the product generation	Autosys is operational			
2.001	EDC	Identify and schedule a candidate daily operations plan including all normal operations, PGEs allocated to the release, for the test based on the information about the availability of Landsat -7 L0R data from LPS and MODIS Level 2 data (on line) from GSFC	Suitable daily operations plan is scheduled.			
2.002	LPS	Verify that the Landsat 7 L0R data is stored at LPS according to schedule and a DAN is sent to EDC	DANs are sent to EDS, according to plan.			
2.003	EDC	Verify that EDC Pulls and archives the Landsat L0R data, when DANs are received	Landsat L0R data are received and archived as scheduled.			
2.004	EDC	Ingest ASTER Level 1 data from tape at scheduled times	Verify ASTER data is archived as scheduled.		, DADS3100#B , EOSD1030#B	
2.005	EDC	Verify that receipt of ASTER L1 data triggers the ASTER PGE for generation of higher level products	ASTER PGE execution will start.			
2.006	EDC	Monitor the progress of ASTER product generation using Autosys.	Information on the data processing health is continuously monitored.	The monitoring will be continued for all products generated during the entire test.	EOSD1060#B	
2.007	GSFC	Verify that MODIS Level 2 data products are available for delivery, and a subscription notification is sent to EDC.	A subscription notification is sent to EDC.			
2.008	EDC	Verify that EDC has pulled MODIS L 2 data (remote acquire) from GSFC and archived it.	MODIS L2 data is archived at EDC.			
2.009	EDC	Verify that the receipt of MODIS L2 data has triggered the PGE for generation of higher level products, using Autosys.	Start of PGE execution for generating higher level products.			
2.010	EDC	Monitor the progress of MODIS products generation using Autosys.	Information on the data processing health is continuously monitored	The monitoring will be continued for all products during the entire test.		
2.011	EDC	Verify that the higher level ASTER products are generated and archived.	ASTER higher Level products are generated and archived			
2.012	EDC	Verify that the higher level MODIS products are generated and archived.	MODIS products are generated and archived.			

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.013	EDC	Verify, using Autosys and product archival log that ASTER Level 2 and MODIS Level 3 products are generated in less than 24 hours respectively after the receipt of the required input data products.	ASTER Level 2 and MODIS Level 3 products are generated in less than 24 hours respectively after the receipt of the required input data products.		EOSD1070#B	

Attachment 1B

Test Case Id: V2.0-E-EGS-11-01B

Description: This test verifies performance of user access, search, browse, and data distribution at EDC.

Objectives: Verify that the user access to the system, data access and data distribution are achieved within the specified time limits.

Configuration: The EDC DAAC is operational and is operating in the "day in the DAAC" mode as described in test case 1A. this test case will run concurrently with test case 1A.

Data Inputs: Landsat 7 L0R, ASTER L1a, to L3 test data, and MODIS Level L2 to L3 test data, or similar data for data access and distribution test. The system should have a large number (Say 100) of user profiles in data base including users who will access the system during the test. For purposes of this test, the test conditions specified in F&PRS section 7.5.3.4 should be fulfilled.

Verified Requirements: DADS3100#B, DADS3110#B, DADS3135#B, IMS-1780#B

Test Procedures:

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EDC	Verify that EDC is operational as set up in the test case 1A.	EDC is operational as set up in the test case 1A.			
1.002	EDC	Verify that the IMS data base is setup with a large number of user profiles for verification of user authentication, and user access in this test. About 34 log ins /hour.	The IMS user profile data base can support the test.			
1.003	EDC	Verify that the test data required for directory search, guide search, inventory search, and science data orders are all available in the ECS data archives.(Details of these data are to be discussed in advance with the DAAC).	All the test data are available in the DAAC archives.			
1.004	EDC	Verify that arrangements are complete for simulating the required number of user authentications/hour (34), and user accesses for search, browse and data orders, using multiple user terminals (TBD 5?).	All physical and logistic arrangements are made for user access, and data distribution.			

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.001	EDC	Generate 34 user authentication requests/hour, at random, using multiple terminals, with the user profiles available in the system and also some guest users (5) and some un-authorized users (4). log the times at which the authentication requests are sent and when the system responses are received.	The system will respond with 34 authentication responses, 30 approvals and 4 rejections. The average response time for authentication response is 8 seconds or less.	Leave all the 30 users remain logged in	DADS3135#B, IMS-1780#B	
2.002	EDC	Conduct directory search by 14 users/hour, at random, using multiple terminals using a single key word, and 13 users/hour, at random, using multiple keywords (2 or 3). Log the times at which the searches are initiated and when the responses are received.	The directory search results are available in 8 seconds or less on an average, for single keyword searches and in 13 seconds or less on an average for multiple keyword searches.		DADS3135#B, IMS-1780#B	
2.003	EDC	Conduct a Guide search by 14 users/hour, at random, (using multiple terminals) using keyword. Log the times at which the searches are initiated and when the responses are received.	Guide search results are received in 8 seconds or less, on an average.		DADS3135#B, IMS-1780#B	
2.004	EDC	Conduct an inventory search for data from one instrument (Landsat 7, ASTER, MODIS) by 21 users/hour, at random, (using multiple terminals) and for data from multiple instruments (two, from Landsat 7, ASTER, or MODIS) by 20 users. Log the times at which the searches are initiated and when the responses are received. (in some cases select the same data by different users).	Inventory search results are received, on an average by 8 seconds for single instrument and 18 seconds for multiple instruments.		DADS3135#B, IMS-1780#B	
2.005	EDC	Browse selected data by 17 users/hour at random (using multiple terminals). Log the times at which the browse command has been given and the times at which the display of the browse data has started. (In some cases select the same browse data by different users.)	The browse data begins display in 58 seconds or less on an average		DADS3135#B, IMS-1780#B	
2.006	EDC	Conduct document search by 3 users /hour with a key word on documents with about 1000 pages. Log the times at which the search is initiated and when the response is received.	Document search results are available in 3 seconds on an average.	**Not in Release 2.0**	DADS3135#B, IMS-1780#B	

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Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.007	EDC	Log in as multiple users and generate a large number of data product orders (number TBD), The total volume of the orders should be 220 GB (for science data available on the ECS archives, for delivery by network.	Product orders are generated.			
2.008	EDC	Request for cost estimates for each of the orders prepared in the previous step.	The system responds with the cost estimate within 13 seconds on an average.	For L-7 data orders only (Work around)	DADS3135#B, IMS-1780#B	
2.009	EDC	Place a supply order for the orders prepared in the previous steps.	Data supply orders are confirmed.			
2.010	EDC	Record the time of submission of the data orders. Verify the average time for order confirmation.	The data supply orders are confirmed in 13 seconds, on an average.		DADS3135#B, IMS-1780#B	
2.011	EDC	Monitor the progress of the data distribution activity, and record the number of orders and the volume of data successfully delivered electronically once every hour.	Data transfer starts.			
2.012	EDC	Every 3 hours determine the rate at which the data are distributed, in the previous 3 hours, six hours, 9 hours and 12 hours, as applicable	Data delivery rate is as specified, on an average, over a period of 12 hours		DADS3100#B	
2.013	EDC	Log in as multiple users and Generate a large number of data product orders (number TBD), for science data available on the ECS archives, for delivery by hard media (tape). The total volume of the orders should be 220 GB (TBD?)	Product supply orders are generated			
2.014	EDC	Request for cost estimates for each of the orders prepared in the previous step.	The system responds with the cost estimate within 13 seconds on an average.	For L-7 data orders only	DADS3135#B, IMS-1780#B	
2.015	EDC	Place a supply order for the orders prepared in the previous steps.	Data supply orders are confirmed.			
2.016	EDC	Record the time of submission of the data orders. Verify the average time for order confirmation.	The data supply orders are confirmed in 13 seconds, on an average.		DADS3135#B, IMS-1780#B	
2.017		Monitor the progress of data distribution activity, and record the number of orders and the volume of data successfully delivered on hard media, once every hour.	Data delivery starts.	The delivery is considered as complete when the data are recorded on tape and packed and ready for dispatch.		
2.018	EDC	Every 3 hours determine the rate at which the data are distributed, in the previous 3 hours, six hours, 9 hours and 12 hours as applicable.	Data delivery rate is as specified, on an average, over a period of 12 hours.		DADS3110#B	

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified

Attachment 2

Test Case Id: V2.0 E-EGS-11-02

Description: This test verifies the capability of EDC DAAC to:

1. Deliver data archived on tape to the communications network within 5 minutes in response to data requests. The conditions under which the test is required to be conducted are:
i) Normal operating load consisting of ingest, archive, distribution to PGS and media distribution operations taking place in parallel at normal rates,
ii) The maximum number of data requests in the tape (near line) archive to be satisfied simultaneously at each DAAC is as given below, where each request represents one tape of 100 MB or less, each of which is located on a separate tape.

DAAC	Number of requests in queue
GSFC	6
EDC	5
LaRC	6
NSIDC	4

The total Data distribution volume at each DAAC, as stated in DADS#3100B and DADS#3110B should also be achieved.

2. Deliver the data sets available for rapid retrieval (kept on line), to the communications network, within 60 seconds in response to data requests. The conditions under which this is required to be achieved are:

i) The operator will determine the type of data sets or granules for such a delivery, and the respective time periods during which these data sets/granules will be available for rapid retrieval,

ii) The total volume of such predetermined data, and the number of data requests to be satisfied at each DAAC are as follows:

DAAC	Total Vol. (GB)	# of Req. (100Mb or less)
GSFC	20	3
EDC	15	3
LaRC	25	3
NSIDC	5	3

iii) The operator will have the capability to reconfigure the on line storage in order to increase or decrease the total volume at each DAAC stated in condition ii) above.

Objectives: Verify that:
1. The system delivers data archived on tape to the communications network within 5 minutes in response to data requests,
2. The system delivers the data sets available (on line) for rapid retrieval to the communications network within 60 seconds in response to data requests.

Configuration: EDC DAAC will be configured for the daily operational activities based on the science operations plan and the technical baseline. All hardware, software, and PGEs as integrated in to the system ar operational and the operations are supported by the M&O personnel. The EDC is configured to receive Landsat- 7 L0R data from LPS and MODIS L-2 data from GSFC, and ancillary data as required for product generation from the designated sources. MODIS and ASTER higher Level Products are generated according to the normal daily schedule. This test case will run concurrently with test cases 1A and 1B, when the DAAC is operating at normal load, using an additional workstation.

Data Inputs: L0R data from LPS, and ASTER L1a /L1b data tapes from ASTER GDS. All ancillary data required for higher level product generation. Landsat 7 L0R, ASTER, MODIS Level L1 to 3 test data, or similar data, for data access and distribution test. The system should have a large number of user profiles in data base including users who will access the system during the test (Say 100). For purposes of this test, the test conditions specified in F&PRS section 7.5.3.4 should be fulfilled.
Science data sets (total volume 15 GB), are kept on line for rapid retrieval.

Verified Requirements: DADS3125#B, DADS3126#B

Test Procedures

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
1.001	EDC	Verify that EDC DAAC is fully operational and is setup to operate in a "day in the DAAC " mode.	EDC DAAC is operational.			
1.002	EDC	Ensure/Verify that the EGS 11 test cases 1A and 1B are running concurrently. (This test case is to be executed in parallel with test cases 1A and 1B).	Test cases 1A and 1B are being executed.			
1.003	EDC	Verify that the test data sets / granules needed for rapid retrieval are available on line and its volume is 15GB.	The test data required for rapid retrieval are available on line.			

Step ID	Station	Actions	Results	Comments	Verified Reqs.	Last Modified
2.001	EDC	Using a dedicated workstation in the DAAC, prepare and submit 5 data requests from the archives (each request is for not more than 100MB of data , and the data ordered is from a single archived tape).	The data supply orders are received by the system.			
2.002	EDC	Using the data logs, verify that the requested data is made available to the network within 5 minutes of the order submission.	Data requested from archived tapes are delivered to the communications network in 5 minutes or less.		DADS3125#B,	
2.003	EDC	Using a workstation in the DAAC, prepare and submit 5 data requests from the on line storage (each request is for not more than 100MB of data).	The data supply orders are received by the system.			
2.004	EDC	Using the data logs, verify that the requested data is made available to the network within 60 seconds of the order submission.	Data requested from the online storage is delivered to the communications network in 60 seconds or less.		DADS3126#B	

Attachment X
RBRs with Performance Requirements

Paragraph id	Rele	Text	Req type	Req cat	Req interpretation
DADS1235#B	B0	Each DADS shall temporarily store expedited data received for 48 hours or until production data are available (whichever comes first).	performance | functional	mission essential	At Release A. expedited data will be stored. The mechanism to automatically delete it after 48 hours or when production on data are available will not be available until Release B.
DADS2778#B	B0,B1	Each DADS shall be capable of receiving and archiving three days' worth of data (see Appendix C) in any given day.	performance	mission essential	*The Release B0 archives throughput are calculated based on the capacity to accommodate the Release B0 supported* *missions until 1 year after AM-1 launch (middle of 99). The archive at GSFC is also sized to support the TSDIS data (along with required ancillary) and V0 migration data while LaRC archive is also sized to support the CERES (TRMM) data (along with required ancillary) and V0 migration data. EDC and NSIDC are also sized to support V0 migrated data. Total* *throughput capacity from L0 plus non-EOS data and 1.2 days worth of higher level EOS data in 1 day , derived from the* *Feb., 1996 Technical Baseline (Release B0 procurement baseline) in GB/day is 574 @ GSFC, 295 @ LaRC, 540 @ EDC* *and 20 @NSIDC. Note The specified TRMM/TSDIS storage volumes are to accommodate possible future data migration*
DADS3100#B	B0, B1	Each DADS shall be capable of transmitting data over communications network in support of data production requests at the data rate specified in Appendix C and in support of data distribution requests at a rate equivalent to daily product volume (L1-L4).	performance	mission essential	*The Release B0 Data Server supports the data production the following network distribution flows, as derived from the L1-L4 volume in the Feb., 1996 Technical Baseline (Release B0 procurement baseline): @GSFC 368 GB/day to users, @* *LaRC 146 GB/day to users, @ EDC 88 GB/day to users and @ NSIDC 11 GB/day to users. This includes the distribution of data for instrument calibration and data QA.*
DADS3110#B	B1	Each DADS shall be capable of distributing data via physical media at a rate equivalent to the rate data are ingested at that DADS.	performance	mission essential	
DADS3125#B	B0, B1	Each DADS shall make archive data, stored in a predefined ECS standard format, that has been requested for delivery via communications network, available to the network in the same format in less than 5 minutes after the receipt of a request for that data under conditions stated below. This requirement applies to all data (TRMM, AM, LS-7, etc.) archived by ECS at all DAACs. Conditions for DADS3125: 1) Normal operating load consisting of ingest, archive, query, inter-DAAC data transfer, distribution to PGS, and media distribution operations taking place in parallel at nominal rates. 2) The maximum number of data requests in the tape (near-line) archive distribution queue to be satisfied simultaneously at each DAAC is given below, where each request represents one file of 100MB or less, each of which is located on a separate tape. DAAC Number of requests in Queue GSFC 6	performance	mission fulfillment	

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Paragraph id	Rele	Text	Req type	Req cat	Req interpretation
		EDC 5 LaRC 6 JPL 4 NSID 4 3) The total daily distribution volume at each DAAC, as stated in DADS3100 and DADS3110, must also be achieved. *Support for the JPL DAAC and the priority queuing of Electronic Distribution Requests are not provided until B1*			
DADS3126#B	B1	The DADS shall be capable of retrieving and making a limited amount (as stated below) of data available to the communications network for electronic delivery in less than 60 seconds after the receipt of a data request for such data sets or granules under the following conditions: 1) The operator will predetermine the type of data sets or granules for such delivery, and the respective time periods during which these data sets or granules will be available for rapid retrieval (kept on-line). 2) The total volume of such predetermined data, and the number of data requests to be satisfied in parallel at each DAAC are as follows: DAAC Total Volume (GB) # of Requests* GSFC 20 3 EDC 15 3 LaRC 25 3 JPL 15 3 NSIDC 5 3 3) The operator will have the capability to reconfigure the on-line storage in order to increase or decrease the total volume at each DAAC stated in condition (2) above. *Each data request represents one file of 100 MB or less.	performance	mission fulfillment	
DADS3135#B	B1	The DADS shall have the capability to support the transaction rate as specified in Table 7-4.	performance	mission essential	
EOSD1030#B	B0	ECS shall have the capacity to accept a daily average of two (2) per cent of the daily data throughput as expedited data for use in mission functions of calibration and anomalies.	performance | functional	mission essential	
EOSD1050#B	B0	ECS shall generate and make available to the users Level 1 Standard Products within 24 hours after the availability to ECS of all necessary input data sets.	performance	mission fulfillment	
EOSD1060#B	B1	ECS shall generate and make available to the users Level 2 Standard Products within 24 hours after the availability to ECS of all necessary Level	performance	mission fulfillment	

Paragraph id	Rele	Text	Req type	Req cat	Req interpretation
		1 and other input data sets.			
EOSD1070#B	B1	ECS shall generate and make available to the users Level 3 Standard Products within 24 hours after the availability to ECS of all necessary Level 2 and other input data sets.	performance	mission fulfillment	
EOSD1080#B	B1	ECS shall generate and make available to the users Level 4 Standard Products within one week after the availability to ECS of all necessary Level 3 and other input data sets.	performance	mission fulfillment	
IMS-1780#B	B0, B1	The IMS shall respond to each user session operation within the time period specified in Table 7-4 with the specified rate of IMS operations.	performance	mission essential	
IMS-1785#B	B1	The IMS performance specified in Table 7-4 shall be maintained during other IMS operational activities such as database updates from the DADS.	performance	mission essential	